

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

The Development of the Retina.

The investigations of Löwe apparently showed that the retina of mammalian animals is developed in a manner diametrically opposite to that of birds and batrachian reptiles. This remarkable conclusion, exceptional as it is to the general laws of development, has led to an extended investigation of the subject by OGNEFF, of Moscow, who has arrived at the opinion that the appearances seen by Löwe are for the most part the result of his method of treatment, which is ill-suited to so delicate a structure as the embryonal retina. Löwe distinguished in the earliest stage of development four layers—(1) the external limiting membrane; (2) a layer of clear elements, not everywhere continuous; (3) a layer of small, round, dark, radiating bodies; (4) a clear homogeneous mass, in which here and there indications of a radiating striation could be perceived. But Ogneff finds at this period only spindle-shaped cells, with oval nuclei and a fine ring of protoplasm, from each extremity of which processes extend. Here and there on the outer surface were large clear cells, with roundish nuclei. No special limiting membranes could be perceived. The first visible change consists in a division of the innermost cells, which also become large and round, with more conspicuous nuclei and more numerous processes, of which the inner curve round and run parallel with the inner surface of the retina. These are, without doubt, the earliest appearance of the nerve fibres. The processes of the outer layer of cells can be clearly traced through the whole thickness of the retina, and some of these processes are thickened at the extremity—the embryonal form of Müller's fibres, which Löwe states do not appear until a much later period. The clear elements on the outer surface described by him could not be discovered by Ogneff at this period. The further changes in the retina consist in this, that between the embryonal nerve fibres and the spindle cells lying immediately outside them appears a narrow streak, the indication of the molecular layer. It is interrupted in places by the two cellular layers. From what the substance of this layer is developed, Ogneff could not discern; but it appears to consist of numerous nerve-cell processes and the embryonal Müller's fibres and other fibres which run vertically, these fibrillary elements being accompanied by extremely fine granules, easily separated by maceration in water. It does not at this period appear to contain a special spongy substance. Subsequently these layers, and especially the molecular and nerve-cell layers, undergo further development. They become more

sharply limited, and increase in thickness. In the former free nuclei become visible, and also roundish cells, which are irregularly scattered in the mammalia, but arranged in series in pigeons. The differentiation of the retina terminates with the appearance of the rods and with the two granular layers. The rods are not formed, as Löwe asserts, beneath the external limiting membrane, but appear opposite the processes of the cells which lie on the outer part of the retina. The separation of the two granular layers commences just before the appearance of the rods; the cells in the outer part of the retina divide and become much smaller, but those lying most deeply are rather larger than the others, and roundish. From this description it appears that the process of development of the mammalian retina occurs in the same manner as in birds and batrachia.—*Lancet*, Sept. 3, 1881.

MATERIA MEDICA AND THERAPEUTICS.

Action and Uses of Antipyretic Medicines, including the Influence exerted by Medicines administered internally upon Septicæmia and Allied Conditions.

In a paper with this title read at the London Congress, Prof. BINZ summarized his views as follows:—

1. In the present state of our knowledge, there are two modes in which antipyretic remedies may be conceived to operate: first, by increasing the discharge of the pyrexial heat; secondly, by checking its production.

2. The quantity of heat discharged may be augmented by direct withdrawal (tepid water), or by facilitating the circulation through the skin (digitalis, cutaneous irritants).

3. Heat production may be lessened by repeated cooling of the surface, and especially by the internal use of anti-zymotics.

4. Febrile diseases commonly owe their origin to the introduction and rapid development of substances akin to ferments. Several of these have been shown to resemble yeast in being low vegetable organisms, or derived from such organisms. They enter the glands, where they undergo multiplication, increase the metabolic processes, generate products of decomposition which exert a paralyzing action on the nervous system, and raise the standard of temperature throughout the body.

5. Owing to impaired action of the heart in certain stages of the disorder, or to contraction of the cutaneous vessels, the skin becomes anæmic, and gives off less heat than usual. The internal temperature rises accordingly.

6. Quinine, our chief anti-pyretic, acts by directly combating the efficient cause of the disorder, and by checking the abnormal metabolism going on in the body. The nervous system takes no part, or only a secondary part, in this operation. In intermittent fevers, quinine prevents the paroxysms by attacking their infective cause. The paroxysms are not the essence—the substantive element—of the disease; they are only a symptom of it. The substantive element is the poison deposited in the colourless corpuscles of many organs, especially the spleen. There are fevers without paroxysms, and paroxysms without fever. It is just those intermittent fevers which run their course without paroxysms that are the most malignant. The malarial poison rapidly causes disintegration of the tissues and the blood, and so paralyzes the nerve-centres.

7. The reduction of acute splenic tumours by quinine depends upon the adverse influence exerted by the alkaloid on the infective poison to which the morbid over-action of the spleen and its consequent enlargement are due. “*Cessante*